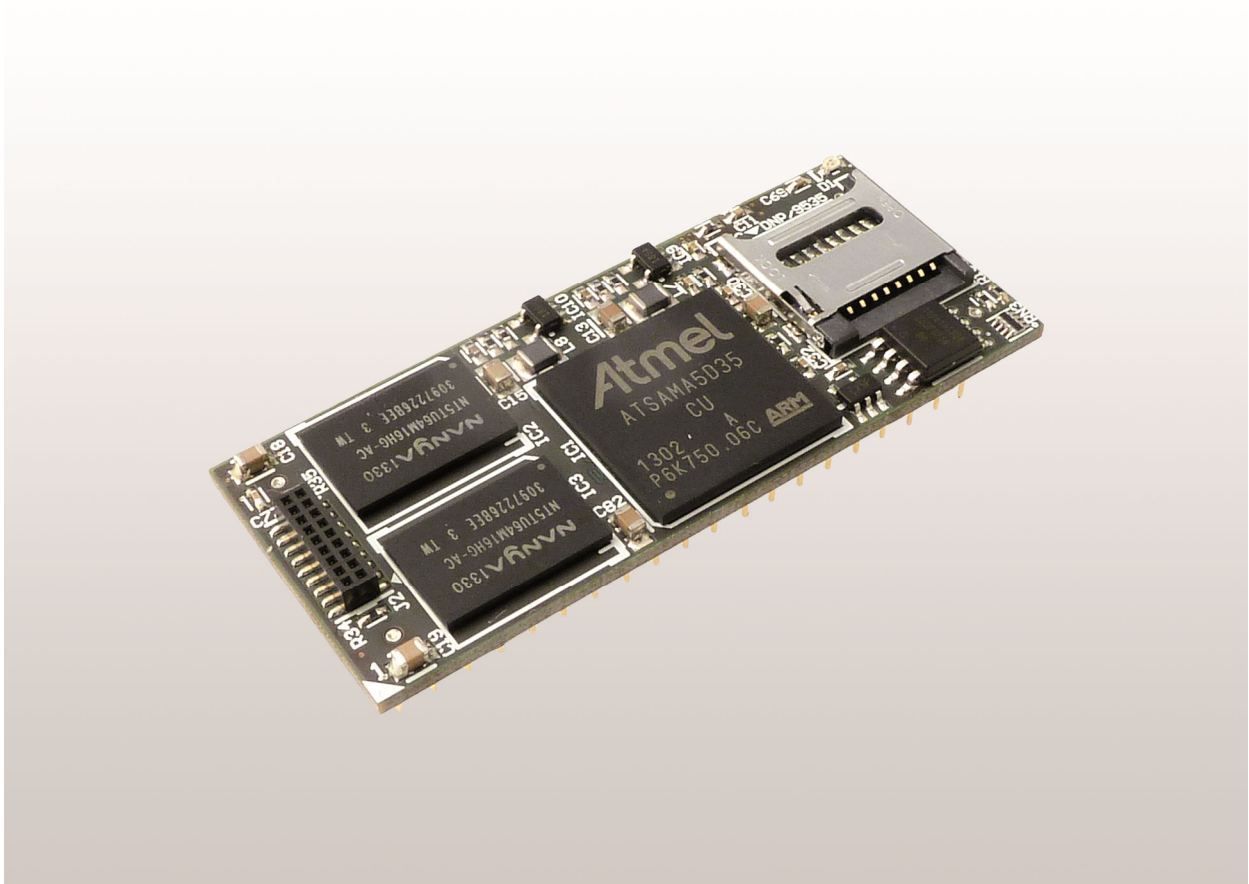


DIL/NetPC DNP/9535

Board Revision 1.0

Hardware Reference



SSV Embedded Systems

Dünenweg 5
D-30419 Hannover
Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40
E-mail: sales@ssv-embedded.de

Document Revision: 1.0
Date: 2014-04-01

CONTENT

1	INTRODUCTION	3
1.1	Safety Guidelines.....	3
1.2	Conventions.....	3
1.3	Block Diagram.....	4
1.4	Features and Technical Data.....	5
2	BOARD LAYOUT.....	6
3	PINOUTS	7
3.1	DIL-40 Connector – J1	7
3.2	DIL-40 Connector Function Multiplexing.....	8
4	MECHANICAL DIMENSIONS.....	9
5	HELPFUL LITERATURE	10
	CONTACT	10
	DOCUMENT HISTORY	10

1 INTRODUCTION

This document describes the basic hardware components of the DIL/NetPC DNP/9535.

1.1 Safety Guidelines

Please read the following safety guidelines carefully! In case of property or personal damage by not paying attention to this document and/or by incorrect handling, we do not assume liability. In such cases any warranty claim expires.



ATTENTION!

Observe precautions for handling – electrostatic sensitive device!

- Discharge yourself before you work with the device, e.g. by touching a heater of metal, to avoid damages.
- Stay grounded while working with the device to avoid damage through electrostatic discharge.

1.2 Conventions

Convention	Usage
bold	Important terms
<i>italic</i>	Filenames, user inputs and command lines
monospace	Pathnames, internet addresses and program code

Table 1: Conventions used in this Document

1.3 Block Diagram

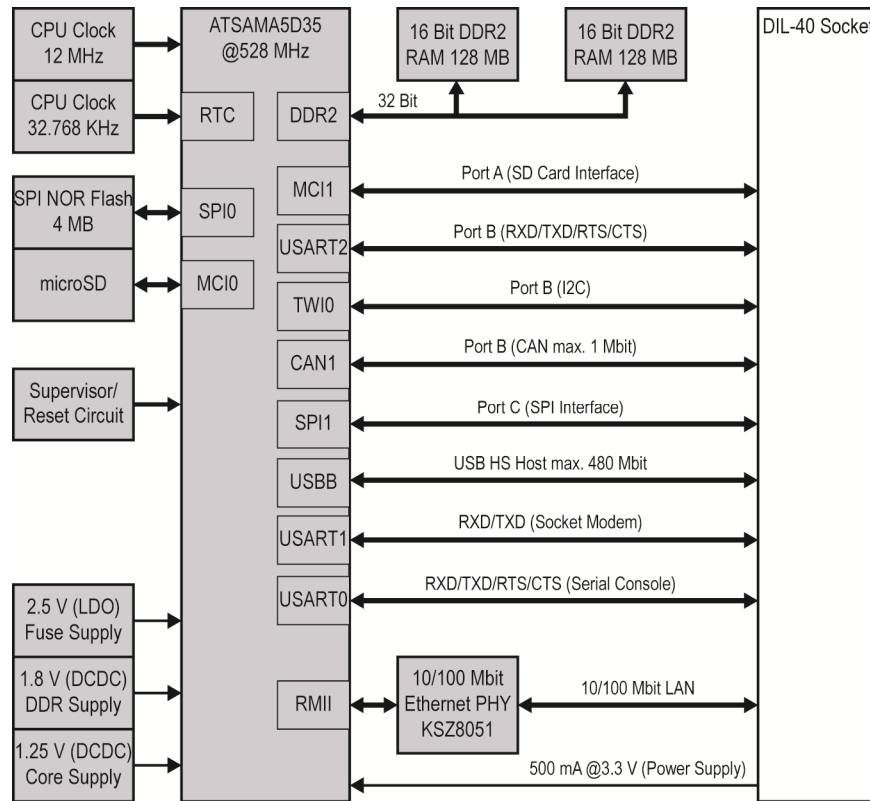


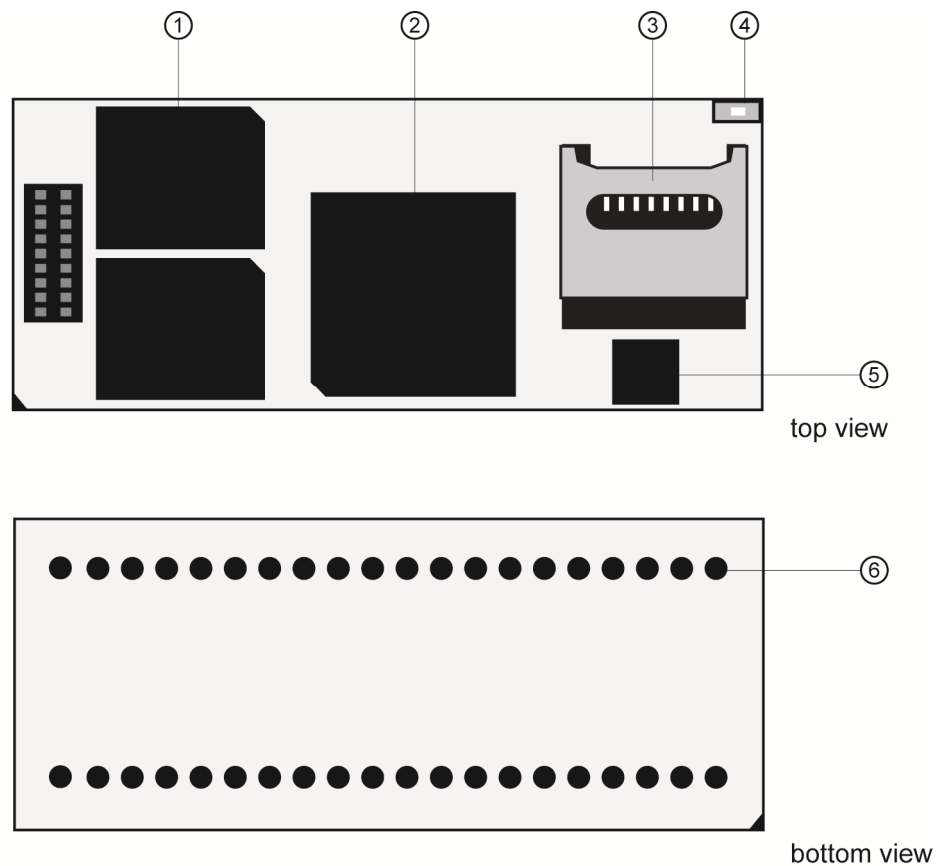
Figure 1: Block diagram of DIL/NetPC DNP/9535

1.4 Features and Technical Data

- ATSAM-A5D35 MCU @ 528 MHz
- 256 MB 32-bit DDR2 RAM @ 133 MHz
- 4 MB serial NOR Flash memory
- 1x 10/100 Mbps Ethernet LAN interface
- 20-bit GPIO (General Purpose Input Output)
- 3x UART (COM1 with all hardware handshake signals, COM2 TX/RX only, COM3 TX/RX/RTS/CTS - functional OR with four GPIO signals)
- 1x SPI master/slave controller, functional OR with four GPIO signals
- 1x I2C interface master/slave controller, functional OR with two GPIO signals
- 1x CAN master interface
- 1x USB 2.0 host port with max. 480 Mbps
- 1x SD card interface with hinge
- Programmable watchdog timer
- Power supervisor for VCC control
- 40-pin JEDEC DIL-40 connector, 2.54 mm centers
- Pin-compatible to other SSV DIL-40 devices
- Supply voltage 3.3 VDC ($\pm 5\%$)
- Supply current 300 mA typical / 500 mA max.
- Operating temperature 0 .. 70° C
- Size 55 mm x 23 mm
- Preinstalled U-Boot boot loader with flash device support
- Preinstalled Linux O/S with 3.13.2 kernel (see note 1)

Note 1: The DNP/9535 Linux O/S is based on the OpenEmbedded software framework.

2 BOARD LAYOUT



- | | |
|--------------------------|--------------------------------|
| ① 2x 128 MB DDR2 RAM | ④ D1: LAN LED |
| ② Atmel ATSAM-A5D35 MCU | ⑤ 4 MB serial NOR Flash memory |
| ③ J3: microSD card hinge | ⑥ J1: DIL-40 connector |

Figure 2: Board layout DIL/NetPC DNP/9535

3 PINOUTS

3.1 DIL-40 Connector – J1

Pin	Name	Group	Function
1	PA0	PIO	Parallel I/O, Port A, Bit 0
2	PA1	PIO	Parallel I/O, Port A, Bit 1
3	PA2	PIO	Parallel I/O, Port A, Bit 2
4	PA3	PIO	Parallel I/O, Port A, Bit 3
5	PA4	PIO	Parallel I/O, Port A, Bit 4
6	PA5	PIO	Parallel I/O, Port A, Bit 5
7	PA6	PIO	Parallel I/O, Port A, Bit 6
8	PA7	PIO	Parallel I/O, Port A, Bit 7
9	PB0	PIO	Parallel I/O, Port B, Bit 0
10	PB1	PIO	Parallel I/O, Port B, Bit 1
11	PB2	PIO	Parallel I/O, Port B, Bit 2
12	PB3	PIO	Parallel I/O, Port B, Bit 3
13	PB4	PIO	Parallel I/O, Port B, Bit 4
14	PB5	PIO	Parallel I/O, Port B, Bit 5
15	PB6	PIO	Parallel I/O, Port B, Bit 6
16	PB7	PIO	Parallel I/O, Port B, Bit 7
17	RESIN	RESET	Reset Input (Low Active)
18	HDMA	USB	USB Host Port -
19	HDP A	USB	USB Host Port +
20	GND	---	Ground
21	RCM	---	RCM (Remote Console Mode) Input
22	TX+	LAN	10/100 Mbps LAN, TX+ Pin
23	TX-	LAN	10/100 Mbps LAN, TX- Pin
24	RX+	LAN	10/100 Mbps LAN, RX+ Pin
25	RX-	LAN	10/100 Mbps LAN, RX- Pin
26	TXD2	SIO	COM2 Serial Port, TXD Pin
27	RXD2	SIO	COM2 Serial Port, RXD Pin
28	RI1	SIO	COM1 Serial Port, RI Pin
29	DTR1	SIO	COM1 Serial Port, DTR Pin
30	DSR1	SIO	COM1 Serial Port, DSR Pin
31	DCD1	SIO	COM1 Serial Port, DCD Pin
32	RTS1	SIO	COM1 Serial Port, RTS Pin
33	CTS1	SIO	COM1 Serial Port, CTS Pin
34	TXD1	SIO	COM1 Serial Port, TXD Pin
35	RXD1	SIO	COM1 Serial Port, RXD Pin
36	PC0	PIO	Parallel I/O, Port C, Bit 0
37	PC1	PIO	Parallel I/O, Port C, Bit 1
38	PC2	PIO	Parallel I/O, Port C, Bit 2
39	PC3	PIO	Parallel I/O, Port C, Bit 3
40	VCC	---	3.3 Volt Power Input

Table 2: Pinout DIL-40 connector

Note: The arrangement of the signals in groups has compatibility reasons. Other products of SSV with DIL-40 pinout are fully or conditionally pin compatible to the DIL/NetPC DNP/9535 by observance of the corresponding application note.

3.2 DIL-40 Connector Function Multiplexing

Some pins of the DIL-40 connector of the DNP/9535 have multiple meanings. The pins have a main and an alternate function (function multiplexing).

The main functions correspond with the standard pinout of the DIL-40 connector as shown in **table 2**. The alternate functions are shown in **table 3** below.

Pin	Name	Main Function	Name	Alternate Function
1	PA0	Parallel I/O, Port A, Bit 0	SDCCLK	SD Card Clock
2	PA1	Parallel I/O, Port A, Bit 1	SDCCMD	SD Card Command
3	PA2	Parallel I/O, Port A, Bit 2	SDCD0	SD Card Data Bit 0
4	PA3	Parallel I/O, Port A, Bit 3	SDCD1	SD Card Data Bit 1
5	PA4	Parallel I/O, Port A, Bit 4	SDCD2	SD Card Data Bit 2
6	PA5	Parallel I/O, Port A, Bit 5	SDCD3	SD Card Data Bit 3
7	PA6	Parallel I/O, Port A, Bit 6	SDCD	SD Card Card Detection
8	PA7	Parallel I/O, Port A, Bit 7	SDCPWR	SD Card Power
9	PB0	Parallel I/O, Port B, Bit 0	TXD3	COM3 Serial Port, TXD Pin
10	PB1	Parallel I/O, Port B, Bit 1	RXD3	COM3 Serial Port, RXD Pin
11	PB2	Parallel I/O, Port B, Bit 2	RTS3	COM3 Serial Port, RTS Pin
12	PB3	Parallel I/O, Port B, Bit 3	CTS3	COM3 Serial Port, CTS Pin
13	PB4	Parallel I/O, Port B, Bit 4	SCL	I2C Clock
14	PB5	Parallel I/O, Port B, Bit 5	SDA	I2C Data
15	PB6	Parallel I/O, Port B, Bit 6	CANTX	CAN Port, TXD Pin
16	PB7	Parallel I/O, Port B, Bit 7	CANRX	CAN Port, RXD Pin
36	PC0	Parallel I/O, Port C, Bit 0	MOSI	SPI MOSI
37	PC1	Parallel I/O, Port C, Bit 1	MISO	SPI MISO
38	PC2	Parallel I/O, Port C, Bit 2	SPICLK	SPI Clock
39	PC3	Parallel I/O, Port C, Bit 3	SPICS0	SPI Chip Select 0

Table 3: DNP/9535 function multiplexing

4 MECHANICAL DIMENSIONS

All length dimensions have a tolerance of 0.5 mm.

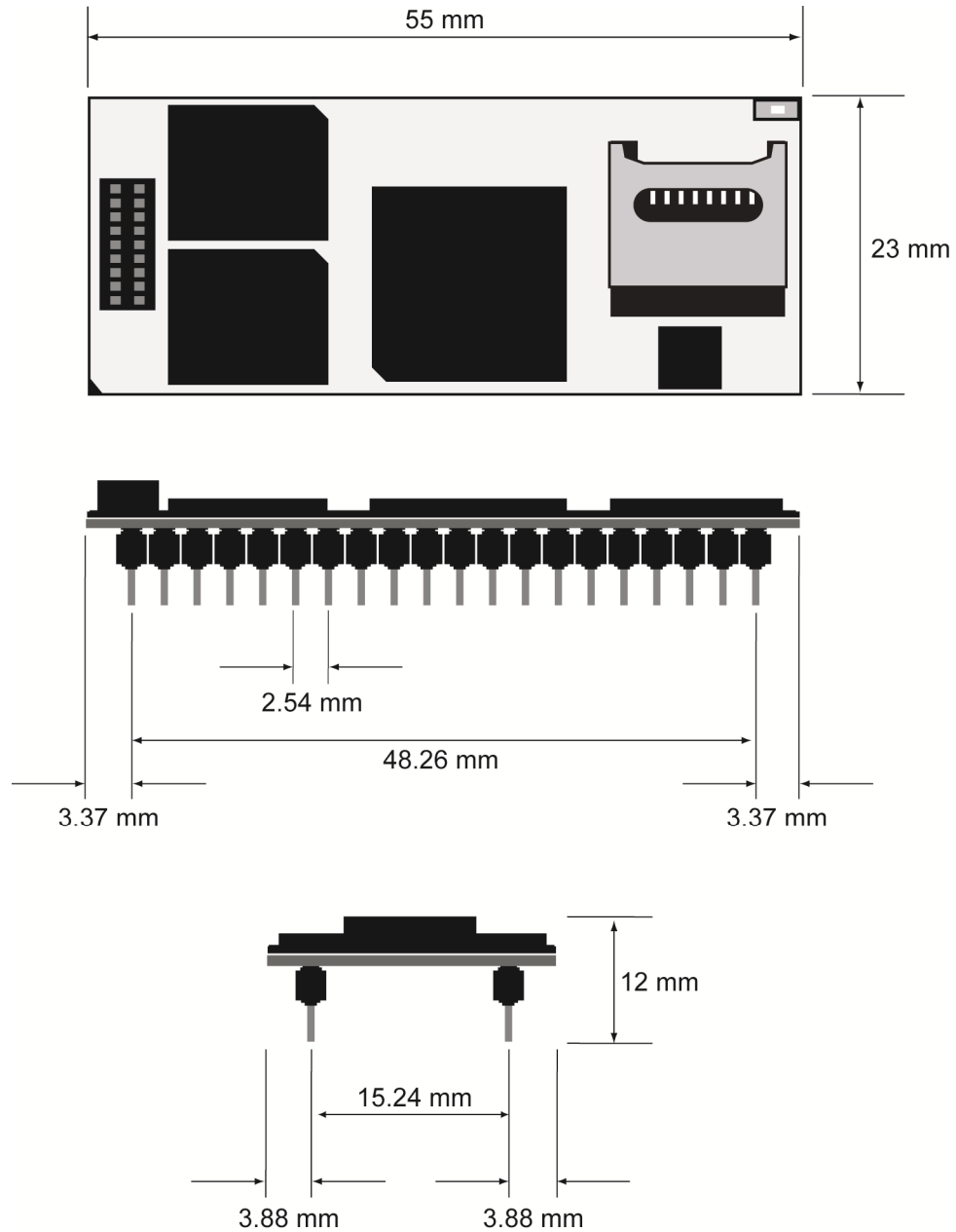


Figure 3: Mechanical dimensions of DIL/NetPC DNP/9535

5 HELPFUL LITERATURE

- DNP/EVA6 Hardware Reference

CONTACT

SSV Embedded Systems

Dünenweg 5
D-30419 Hannover

Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40
E-mail: sales@ssv-embedded.de

Internet: www.ssv-embedded.de
Forum: www.ssv-comm.de/forum

DOCUMENT HISTORY

Revision	Date	Remarks	Name	Review
1.0	2014-04-01	first version	WBU	SSC

The content of this document can change any time without announcement. There is taken over no guarantee for the accuracy of the statements. The user assumes the entire risk as to the accuracy and the use of this document. Information in this document is provided 'as is' without warranty of any kind. Some names within this document can be trademarks of their respective holders.

© 2014 SSV EMBEDDED SYSTEMS. All rights reserved.